AMENDMENTS TO THE CLAIMS

What is claimed is:

1. (Canceled)

2. (Currently Amended) ~~The apparatus of claim 1, wherein:~~ An apparatus comprising:

a despreader to despread data within a baseband code division multiple access (CDMA) signal, said data being associated with a desired user; and

a despreading sequence generator to generate a joint equalization/multi-user detection (MUD) despreading sequence for use by said despreader to despread said data;

wherein said despreading sequence generator treats active users as being within one of two groups, a first group for users whose signature sequences are assumed to be known to the apparatus and a second group for users whose signature sequences are assumed to be unknown to the apparatus.

3. (Original) The apparatus of claim 2, wherein:

said despreading sequence generator generates said joint equalization/MUD despreading sequence based on a quantity of users in said first group and a quantity of users in said second group.

4 (Original) The apparatus of claim 2, wherein:

said apparatus processes user signals associated with users in said first group using MUD-type processing and user signals associated with users in said second group using equalizer-type processing.

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5. (Original) The apparatus of claim 2, wherein:

said apparatus behaves as a RAKE receiver when a quantity of users in said first group is 1 and a quantity of users in said second group is 0.

6. (Original) The apparatus of claim 2, wherein:

said apparatus behaves as a minimum mean square error (MMSE) equalizer when said first group includes only said desired user and said second group includes all other users associated with the same base station as said desired user.

7. (Original) The apparatus of claim 2, wherein:

said apparatus behaves as a multi-user detector (MUD) when said first group includes all active users and said second group includes no users.

8. (Original) The apparatus of claim 2, wherein:

active users are assigned to said first and second groups based on a predetermined assignment criterion.

9. (Original) The apparatus of claim 8, wherein:

said predetermined assignment criterion is user-definable.

10. (Original) The apparatus of claim 8, wherein:

said predetermined assignment criterion places users associated with a serving base station within said first group and users associated with other base stations within said second group.

11. (Original) The apparatus of claim 8, wherein:

said predetermined assignment criterion places users having stronger received signals within said first group and users having weaker received signals within said second group.

12. (Currently Amended) The apparatus of claim [[1]] 2, further comprising:

a chip rate sampler to sample said baseband CDMA signal at a chip rate before said signal reaches said despreader.

13. (Currently Amended) The apparatus of claim [[1]] 2, further comprising:

a channel decoder to decode an output of said despreader.

14. (Original) The apparatus of claim 13, further comprising:

a feedback path from an output of said channel decoder to allow decoded information to be re-encoded, interleaved, and re-modulated for use in interference cancellation.

15. (Original) A method for use in connection with a code division multiple access (CDMA) receiver, comprising:

assigning individual active users to either a first group or a second group; and

generating a joint minimum mean square error (MMSE) equalization and
multi-user detection (MUD) despreading sequence based on a distribution of active users
within said first and second groups.

16. (Original) The method of claim 15, wherein:

said first group includes users whose signature sequences are assumed known to a
receiver and said second group includes users whose signature sequences are assumed
unknown to the receiver.

17. (Original) The method of claim 15, wherein:

assigning individual active users includes assigning users based upon a
predetermined assignment criterion.

18. (Original) The method of claim 17, wherein:

said predetermined assignment criterion is user definable.

19. (Original) The method of claim 15, wherein:

assigning individual active users includes assigning users associated with a
serving base station to said first group and assigning users associated with other base stations
to said second group.

20. (Original) The method of claim 15, wherein:

assigning individual active users includes assigning users to said first and second
groups based on received signal strength.

21. (Original) The method of claim 15, further comprising:

processing a received CDMA signal using said joint MMSE equalization and MUD despreading sequence.

22. (Original) The method of claim 21, wherein:

processing includes performing RAKE receiver processing on said CDMA signal when said first group includes only a desired user and said second group includes no users.

23. (Original) The method of claim 21, wherein:

processing includes performing MMSE MUD processing when said first group includes all active users and said second group includes no users.

24. (Original) The method of claim 21, wherein:

processing includes performing MMSE equalization when said first group includes only said desired user and said second group includes all other active users associated with the same base station as said desired user.

25. (Original) The method of claim 21, wherein:

processing includes performing a combination of MMSE equalization and MMSE MUD processing when both said first group and said second group include multiple users.

26. (Original) An article comprising a storage medium having instructions stored thereon that, when executed by a computing platform, result in:

assigning, within a code division multiple access (CDMA) receiver, individual active users to either a first group or a second group; and

generating a joint minimum mean square error (MMSE) equalization and multi-user detection (MUD) despreading sequence based on a distribution of active users within said first and second groups.

27. (Original) The article of claim 26, wherein:

said first group includes users whose signature sequences are assumed known to the CDMA receiver and said second group includes users whose signature sequences are assumed unknown to the CDMA receiver.

28. (Original) The article of claim 26, wherein said instructions, when executed by said computing platform, further result in:

processing a received CDMA signal using said joint MMSE equalization and MUD despreading sequence.

29. (Canceled)

30. (Currently Amended) ~~The system of claim 29, wherein:~~ A system comprising:

multiple receive antennas to receive a code division multiple access (CDMA) signal from a wireless channel;

a despreader to despread data within a baseband version of said CDMA signal, said data being associated with a desired user; and

a despreading sequence generator to generate a joint equalization/multi-user detection (MUD) despreading sequence for use by said despreader to despread said data;

wherein said despreading sequence generator treats active users as being within one of two groups, a first group for users whose signature sequences are assumed to be known to the system and a second group for users whose signature sequences are assumed to be unknown to the system.

31. (Currently Amended) ~~The system of claim 29, wherein:~~ A system comprising:

multiple receive antennas to receive a code division multiple access (CDMA) signal from a wireless channel;

a despreader to despread data within a baseband version of said CDMA signal, said data being associated with a desired user; and

a despreading sequence generator to generate a joint equalization/multi-user detection (MUD) despreading sequence for use by said despreader to despread said data;

wherein said despreading sequence generator generates said joint equalization/MUD despreading sequence based on a quantity of users in said first group and a quantity of users in said second group.

32. (Currently Amended) ~~The system of claim 29, wherein:~~ A system comprising:

multiple receive antennas to receive a code division multiple access (CDMA) signal from a wireless channel;

a despreader to despread data within a baseband version of said CDMA signal, said data being associated with a desired user; and

a despreading sequence generator to generate a joint equalization/multi-user detection (MUD) despreading sequence for use by said despreader to despread said data;

wherein said system processes user signals associated with said first group using MUD-type processing and user signals associated with users in said second group using equalizer-type processing.

33. (Currently Amended) ~~The system of claim 29, further comprising:~~ A system comprising:

multiple receive antennas to receive a code division multiple access (CDMA) signal from a wireless channel;

a despreader to despread data within a baseband version of said CDMA signal, said data being associated with a desired user; and

a despreading sequence generator to generate a joint equalization/multi-user detection (MUD) despreading sequence for use by said despreader to despread said data;

wherein a chip rate sampler to sample said baseband version of said CDMA signal at a chip rate before it reaches said despreader.

34. (Canceled)

35. (Original) ~~The method of claim 34, wherein:~~ A method comprising:

receiving a code division multiple access (CDMA) signal from a wireless channel; and

detecting user data within said CDMA signal, wherein detecting user data includes processing said CDMA signal using a combination of minimum mean square error (MMSE) equalization and MMSE multi-user detection (MUD) techniques;

<u>wherein</u> processing said CDMA signal includes:

obtaining a joint MMSE equalization and multi-user detection (MUD) despreading sequence, <u>said joint MMSE equalization and MUD despreading sequence having</u> <u>been generated based on a distribution of active users within a first group and a second group</u>; and

despreading said user data within said CDMA signal using said joint MMSE equalization and MUD despreading sequence.

36. (Original) The method of claim 35, comprising:

channel decoding said user data after said despreading to generate decoded data; and

using at least some of said decoded data to perform interference cancellation.

37. (Currently Amended) The method of claim [[34]] <u>35</u>, comprising:

converting said CDMA signal from a radio frequency (RF) representation to a baseband representation before said processing.

38. (Original) The method of claim 37, comprising:

sampling said baseband representation of said CDMA signal at a chip rate before said processing.

39. (New) The method of claim 35, wherein:

said first group includes users whose signature sequences are assumed known to a receiver and said second group includes users whose signature sequences are assumed unknown to the receiver.

40. (New) The method of claim 35, wherein:

said first group includes users associated with a serving base station and said second group includes users associated with other base stations to said second group.